

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

LISTING OF CLAIMS:

1. (Currently Amended) Video coding method of exploiting the temporal redundancy between successive frames in a video sequence ~~characterized in that~~ , comprising the steps wherein a reference frame, called an I-frame, is first approximated by a collection of basis function, called atoms, and ~~that~~ wherein either the atoms are quantized, entropy coded and sent to a decoder or ~~that~~ the original I-frame is encoded and transmitted to the decoder using any frame codec, and ~~that the~~ wherein following predicted frames, called [[.]] P-frames, are approximated by the geometric transformations of the basis functions (atoms) describing the previous frame, and ~~that~~ the parameters of the geometric transformation are quantized, entropy coded and sent to a decoder in order to reconstruct the predicted frames.

2. (Currently Amended) Video coding method according to claim 1, ~~characterized in that~~ wherein the I-frame is approximated by a linear combination of N atoms $g_m(x, y)$:

$$I(x, y) = \sum_{n=0}^{N-1} c_n g_m(x, y), \text{ selected in a redundant, structured library and indexed by a string}$$

of parameters γ_n representing the geometric transformations applied to the generating mother function $g(x, y)$ and where the c_n are weighting coefficients.

3. (Currently Amended) Video coding method according to claim 2, ~~characterized in that~~ wherein the atoms occurring in the decomposition are chosen using the Matching Pursuit algorithm.

4. (Currently Amended) Video coding method according to ~~one of the claims 1 to 3, characterized in that~~ claim 1, wherein the parameters and coefficients of the atoms are quantized and entropy coded.

5. (Currently Amended) Video coding method according to ~~the claims~~ to claim 4, ~~characterized in that~~ wherein the quantization of the parameters and the coefficients ~~can~~ vary across time, and ~~that~~ the variation is controlled by a rate control unit.

6. (Currently Amended) Video coding method according to ~~one of the claims 1 to 5,~~ ~~characterized in that~~ claim 1, wherein the method is used together with a residual frame based texture codec that encodes the differences between the original frames and the ones reconstructed using the compensated atoms.

7. (Currently Amended) Video coding method according to ~~one of the claims 1 to 6,~~ ~~characterized in that~~ claim 1, wherein the geometric features (atoms) of the I-frame are computed from the quantized frames at the encoder and decoder and are not transmitted.

8. (Currently Amended) Video coding method according to ~~one of the claims 1 to 7,~~ ~~characterized in that~~ claim 1, wherein the geometric features (atoms) are re-computed after each quantized frame at the encoder and decoder and replace the previous prediction.

9. (Currently Amended) Video coding method according to ~~one of the claims 1 to 8,~~ ~~characterized in that~~ claim 1, wherein the geometric transformations used to build the library

are composed of translations, anisotropic dilations and rotations, applied to a generating mother function $g(x, y)$ by means of the following change of variables:

$$g_r(x, y) = \frac{1}{\sqrt{a_1 a_2}} g(x_n, y_n), \text{ where}$$

$$x_n = \frac{\cos \theta (x - b_1) - \sin \theta (y - b_2)}{a_1}$$

$$y_n = \frac{\sin \theta (x - b_1) + \cos \theta (y - b_2)}{a_2}$$

10. (Currently Amended) Video coding method according to ~~one of the claims 1 to 9,~~
~~characterized in that~~ claim 9, wherein the generating mother function is of the following form:

$$g(x, y) = (1 - x^2) \exp\left(-\frac{x^2 + y^2}{2}\right).$$